

WHAT IS CLAIMED IS:

1. An emission control valve for use in an emission control system of an internal combustion engine comprising:

valve body structure providing an inlet port at which flow enters the valve, an outlet port at which flow exits the valve, a valve element comprising first and second closures spaced apart along an axis for respective cooperation with respective seats that are axially spaced apart to selectively seat on the respective seat for disallowing flow between the inlet port and the outlet port and to unseat from the respective seat for allowing flow between the inlet port and the outlet port, and an actuator for selectively positioning the valve element along the axis relative to the seats,

wherein each seat circumscribes a respective through-hole for flow, the through-hole of one seat is large enough diametrically to allow the closure that seats on the other seat to pass through during fabrication of the valve, each through-hole comprises a respective frustoconical surface zone coaxial with the axis and tapered in the same axial direction, the closure that seats on the other seat seats substantially on a radially outermost portion of the frustoconical surface zone of the through-hole of the other seat when the valve element is disallowing flow, and the other closure seats substantially on a radially innermost portion of the frustoconical surface zone of the through-hole of the one seat when the valve is disallowing flow.

2. A valve as set forth in claim 1 wherein each frustoconical surface zone begins at an axial end of its through-hole.

3. A valve as set forth in claim 2 wherein each closure comprises a respective frustoconical surface zone having opposite axial ends, and an axially intermediate portion of the frustoconical surface zone of the respective closure seats on the through-hole of the respective seat.

4. A valve as set forth in claim 3 wherein the axially intermediate portion of the frustoconical surface zone of the respective closure seats substantially on an axial end of the frustoconical surface zone of the through-hole of the respective seat.

5. A valve as set forth in claim 4 wherein the axial end of the frustoconical surface zone of the through-hole of the respective seat on which the axially intermediate portion of the frustoconical surface zone of the respective closure substantially seats comprises a respective chamfer.

6. A valve as set forth in claim 5 wherein each respective chamfer has a cone angle slightly larger than the cone angle of the frustoconical surface zone of the respective closure.

7. An internal combustion engine comprising an exhaust gas recirculation system for recirculating some engine exhaust gas through the engine via an exhaust gas recirculation valve external to engine combustion chambers wherein the valve comprises valve body structure providing an inlet port at which exhaust enters the valve, an outlet port at which exhaust exits the valve, a valve element cooperating with a seat element for selectively restricting

flow between the inlet port and the outlet port by selectively restricting flow through the seat element, an actuator for selectively positioning the valve element along an axis relative to the seat element, wherein the seat element comprises first and second valve seats axially spaced apart and the valve element comprises first and second closures axially spaced apart, each closure arranged to seat on the respective seat for closing flow between the inlet port and the outlet port and to unseat from the respective seat for allowing flow between the inlet port and the outlet port, and wherein each seat circumscribes a respective through-hole for flow, the through-hole of one seat is large enough diametrically to allow the closure that seats on the other seat to pass through during fabrication of the valve, each through-hole comprises a respective frustoconical surface zone coaxial with the axis and tapered in the same axial direction, the closure that seats on the other seat seats substantially on a radially outermost portion of the frustoconical surface zone of the through-hole of the other seat when the valve element is disallowing flow, and the other closure seats substantially on a radially innermost portion of the frustoconical surface zone of the through-hole of the one seat when the valve is disallowing flow.

8. An engine as set forth in claim 7 wherein each frustoconical surface zone begins at an axial end of its through-hole.

9. An engine as set forth in claim 8 wherein each closure comprises a respective frustoconical surface zone having opposite axial ends, and an axially intermediate

portion of the frustoconical surface zone of the respective closure seats on the through-hole of the respective seat.

10. An engine as set forth in claim 9 wherein the axially intermediate portion of the frustoconical surface zone of the respective closure seats substantially on an axial end of the frustoconical surface zone of the through-hole of the respective seat.

11. An engine as set forth in claim 10 wherein the axial end of the frustoconical surface zone of the through-hole of the respective seat on which the axially intermediate portion of the frustoconical surface zone of the respective closure substantially seats comprises a respective chamfer.

12. An engine as set forth in claim 12 wherein each respective chamfer has a cone angle slightly larger than the cone angle of the frustoconical surface zone of the respective closure.